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L3: Entry 1 of 1

File: DWPI

May 2, 1995

DERWENT-ACC-NO: 1995-197025

DERWENT-WEEK: 199526

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TITLE: Service platform, for boiling-water nuclear reactor - has rotary frame of smaller dia than inside dia of reactor well travelling along reactor well cover.

## PATENT-ASSIGNEE:

ASSIGNEE

CODE

TOSHIBA KK

TOKE

PRIORITY-DATA: 1993JP-0259572 (October 18, 1993)

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INT-CL (IPC): G21 C 19/02

ABSTRACTED-PUB-NO: JP07113896A

## BASIC-ABSTRACT:

A rotary frame small in diameter than the inside diameter of a reactor well travels along the circular rail on the cover of the reactor well.

ADVANTAGE - Work around the reactor can be conducted with the reactor well filled with water.

CHOSEN-DRAWING: Dwg.1/8

TITLE-TERMS: SERVICE PLATFORM BOILING WATER NUCLEAR REACTOR ROTATING FRAME SMALLER DIAMETER DIAMETER REACTOR WELL TRAVEL REACTOR WELL COVER

DERWENT-CLASS: K05

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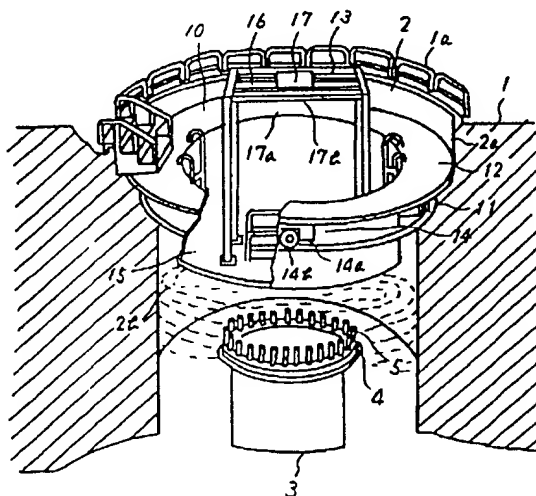
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(54) 【発明の名称】 原子炉サービスプラットフォーム

(57) 【要約】

【目的】 本発明の目的は、被曝低減の観点から原子炉ウエル内に水張りした状態で、しかもオペレーティングフロア上の他の作業と並行して炉内作業を実施できる原子炉サービスプラットフォームを提供することにある。

【構成】 本発明に係る原子炉サービスプラットフォーム10は、原子炉圧力容器3の上部に形成した原子炉ウエル2内部の原子炉ウエルカバー設置用段差部2a上に着脱自在に設置した円形レール11と、この円形レール11の上を走行する原子炉ウエル2の内径より小さい直径を持つ回転架台12とから構成される。



## 【特許請求の範囲】

【請求項1】 原子炉压力容器の上部に形成した原子炉ウエル内部の原子炉ウエルカバー設置用段差部上に着脱自在に設置した円形レールと、この円形レールの上を走行する前記原子炉ウエルの内径より小さい直径を持つ回転架台とを具備することを特徴とする原子炉サービスプラットフォーム。

【請求項2】 前記回転架台は、作業用開口部を有する作業台を設け、この作業台の上部に上部架台を介して走行する巻上機を設けたことを特徴とする請求項1記載の原子炉サービスプラットフォーム。

【請求項3】 前記回転架台は、電動機により旋回する駆動装置を設けたことを特徴とする請求項1記載の原子炉サービスプラットフォーム。

## 【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、沸騰水型原子炉（以下BWRという。）におけるオペレーティングフロアから原子炉内全域にわたる作業をするための原子炉サービスプラットフォームに関する。

【0002】

【従来の技術】一般に、BWRにおける炉内作業は、定期検査毎に予定されている燃料取替え、燃料移動等のルーチン作業と、炉内作業等のルーチン外作業に大別できる。図5乃至図8を用いて、ルーチン作業とルーチン外作業とについて説明する。

【0003】ルーチン作業は、一般的に、オペレーティングフロア1に設置されているレール上を走行する燃料交換機31にて実施され、燃料貯蔵プール32内の燃料貯蔵ラック33へ燃料の出し入れを施行する。

【0004】ルーチン外作業は、原子炉ウエル2内の水を抜き、原子炉压力容器（以下RPVという。）3の上部のRPVフランジ面4に設置されたサービスプラットフォーム6上から実施される。このサービスプラットフォーム6は、RPVフランジ面4に予め設置された円形レール7上を旋回する。しかもRPVフランジ面4上に立設されたRPVスタッドボルト5にて形成された内側スペース内を旋回する。このサービスプラットフォーム6からの作業は、原子炉ウエル2の底部及び原子炉压力容器3からの放射線により作業者が被曝する可能性が大きかった。

【0005】一方、放射線被曝低減の観点から、オペレーティングフロア1の上の燃料交換機31上から炉内作業等のルーチン外作業が実施される場合もある。この場合、炉内作業とオペレーティングフロア1に設置した燃料プール32内の燃料移動等の作業が同時に実施できないという短所があった。

【0006】

【発明が解決しようとする課題】サービスプラットフォーム6上からルーチン外作業を実施する場合、燃料取替作

業中に燃料表面に付着した放射性物質がはがれ落ち原子炉ウエル1の底部に蓄積して高線量および高汚染区域となり、作業者の被曝量が増加する。このため放射線管理上、全面マスク作業が必要となり作業効率が低下するという課題があった。

【0007】一方、燃料交換機31上からルーチン外作業を実施する場合、燃料検査等の燃料貯蔵プール32内の作業及び炉内の改造工事を並行して実施できないという課題があった。また、オペレーティングフロア1に設置した機器貯蔵プール34内の図示しないドライヤ、セパレータ点検等も並行して実施できないという難点もあった。

【0008】本発明は、上記の点を考慮してなされたもので、被曝低減の観点から原子炉ウエル2内に水張りした状態で、しかもオペレーティングフロア1上の他の作業と並行して実施することを可能とする原子炉サービスプラットフォームを提供することを目的とする。

【0009】

【課題を解決するための手段】上記目的を達成するために、本発明においては、原子炉压力容器の上部に形成した原子炉ウエル内部の原子炉ウエルカバー設置用段差部上に着脱自在に設置した円形レールと、この円形レールの上を走行する前記原子炉ウエルの内径より小さい直径を持つ回転架台とを具備することを特徴とする原子炉サービスプラットフォームを提供する。

【0010】

【作用】このように構成することにより、原子炉サービスプラットフォームは、原子炉ウエル内部の原子炉カバー設置用段差部に設置した円形レール上を走行することができる。このため、作業員は、RPVフランジ面の高さに相当する原子炉ウエル底部まで降りることなく、しかも原子炉ウエルの中間の高さまで水張りした状態で、炉内作業等のルーチン外作業と並行して、燃料移動作業等のルーチン作業を施行することが可能となる。このような作業を通して、作業者の被曝低減および定期検査の期間を短縮できる。

【0011】

【実施例】以下図1乃至図4を参照して、本発明の一実施例について説明する。図1において、原子炉サービスプラットフォーム10は、原子炉ウエル2内の原子炉カバー設置用段差部2a上に敷設された円形レール11と、この円形レール11上を360°以上旋回する回転架台12とから構成される。この回転架台12は、駆動装置14により旋回される。駆動装置14は、電動機および減速機14aと、これに連動する車輪14bとから構成される。回転架台12の中央底部には作業床15が設置されている。作業床15に上部架台13が据付けられている。上部架台13の上部には、モノレール16を取付け、そこには、電動ウインチ17aとエアホースリール17bを付設したホイスト17が取付けられている。

【0012】図2において、原子炉サービスプラットフォーム

ーム10の作業床15の中央部に長方形の開口部18を設けている。開口部18の外周辺には、作業者の落下防止のための手すり19が立設され、さらにその外側には、上部架台13の柱13aが立設されている。

【0013】図3において、原子炉サービスプラットフォーム10の駆動装置14には、車輪14bの他に、補助輪20が回転自在に取付けられている。この補助輪20は、円形レール11のガイド板11aに接触して回転し、原子炉サービスプラットフォーム10の位置ずれ防止用として使用される。円形レール11の形状は、補助輪20と接触しながら旋

回するようにガイド板11aが付設されている。またオペレーティングフロア1から作業床15に作業員が昇降するために、原子炉ウエル2の内側上部には階段21、原子炉サービスプラットフォーム10の内側には梯子22が付設されている。

【0014】次にこのような構成からなる本実施例の作用について説明する。まず円形レール11を、原子炉ウエル2内の原子炉カバー設置用段差部2a上に敷設する。この設置された円形レール11の上に、回転架台12を搭載する。上部架台13の上部にあるモノレール16に設置された

ホイス17のワイヤロープ先端に、原子炉内各種サービスツール（図示せず）を取付けて、作業床15の開口部18より吊り降ろす。回転架台12の図示しない操作盤を操作し旋回させ、かつモノレール16に取付けられたホイス17のワイヤロープを上下、左右に移動して、回転架台12の位置決めを行う。このような操作方法により、RPV3内のどの位置に対しても、ホイス17の位置を合わせることができる。次に、図4に示すように、原子炉ウエル2内の中間高さまで水張りした状態2bで作業を施行することができる。また、原子炉サービスプラットフォーム10の回転架台12の高さを、オペレーティングフロア1に立設された手摺1aより低くしている。このため、オペレーティングフロア1上を走行する燃料交換機31は、この手摺1a及び回転架台12を跨いで走行できる。このようにして、原子炉サービスプラットフォーム10からの炉内作業等のルーチン外作業と、燃料交換機31による燃料移動等のルーチン作業を並行して実施することができる。この燃料交換機31からの作業は、原子炉ウエル2の脇に設けた燃料貯蔵プール32内に設置した燃料ラック33への燃料の出入れ及び機器貯蔵プール34内の作業を例示することができる。

【0015】さらに燃料貯蔵プール32へはプールゲ-

ート35、機器貯蔵プール34にはプールゲート36を設置することにより、原子炉ウエル2の中間高さ2bまで水張りすることができる。

【0016】このように本実施例によれば、原子炉ウエル2まで水張りした状態で、原子炉サービスプラットフォーム10上から原子炉内の炉内作業等のルーチン外作業をすることができるので、作業員の被曝低減及び放射線管理上の保護具着用による作業が改善され、作業効率の向上を図ることができる。また、原子炉サービスプラットフォーム10を、原子炉ウエル2内に回転自在に設置することにより、燃料交換機31上からのルーチン作業と原子炉サービスプラットフォーム10上からのルーチン外作業とを並行に実施することが可能となり、定検期間の大幅な短縮が可能となる。

【0017】

【発明の効果】以上説明したように、本発明による原子炉サービスプラットフォームによれば、原子炉ウエルに水張りした状態で作業が可能となり、しかも燃料交換機上からの作業を並行して施行することができるので、作業員の被曝低減、作業能率の向上さらには定検期間の大幅な短縮を図ることができる。

【図面の簡単な説明】

【図1】本発明の一実施例である原子炉サービスプラットフォームを示す鳥瞰図。

【図2】図1で示した原子炉サービスプラットフォームの上面図。

【図3】図1で示した原子炉サービスプラットフォームの側面図。

【図4】図1で示した原子炉サービスプラットフォームを載置した原子炉建屋上部の概略縦断面図。

【図5】従来のサービスプラットフォームを載置した原子炉建屋上部の概略縦断面図。

【図6】従来のサービスプラットフォームを設置した原子炉ウエルの概略縦断面図。

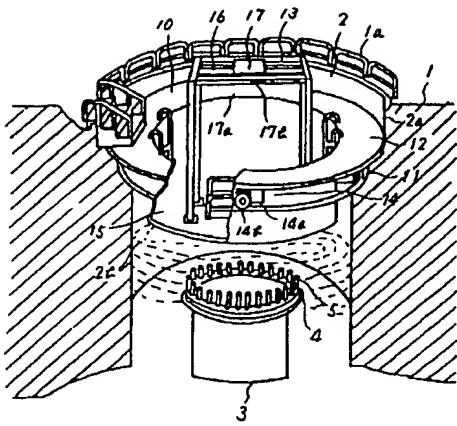
【図7】従来のサービスプラットフォームを示す上面図。

【図8】従来のサービスプラットフォームを示す側面図。

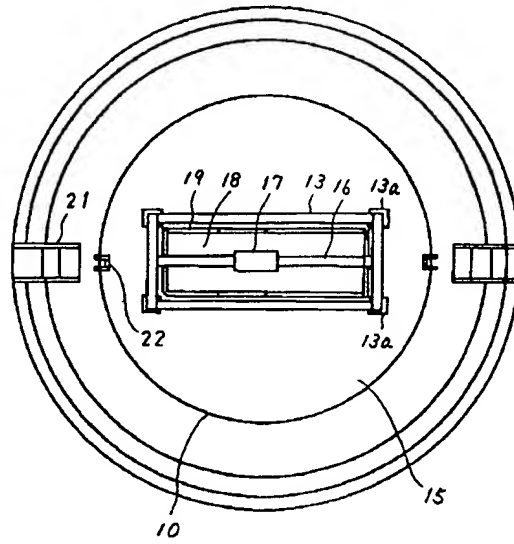
【符号の説明】

2…原子炉ウエル、2a…原子炉ウエルカバー設置用段差部、3…原子炉圧力容器、10…原子炉サービスプラットフォーム、11…円形レール、12…回転架台、13…上部架台、14…駆動装置、14a…電動機および減速機、17…ホイス（巻上機）、18…作業用開口部。

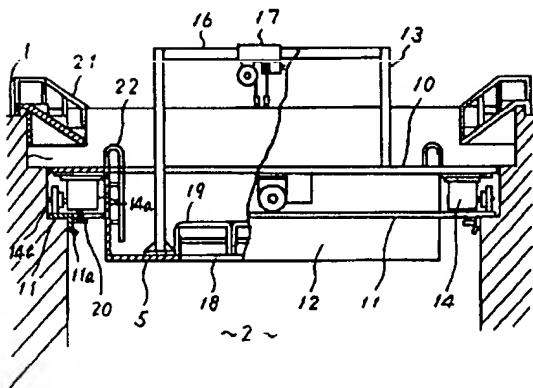
【図1】



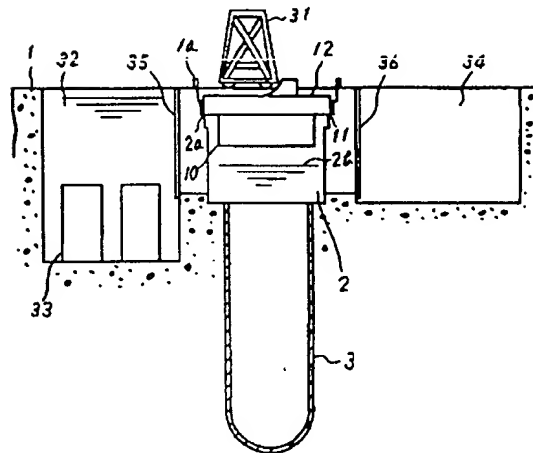
【図2】



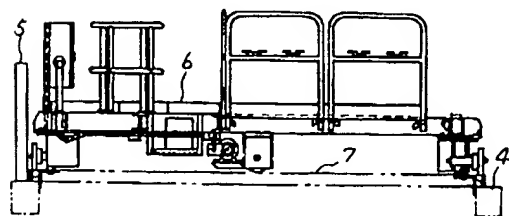
【図3】



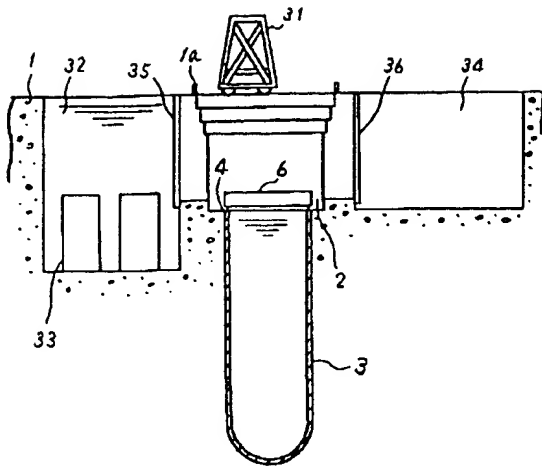
【図4】



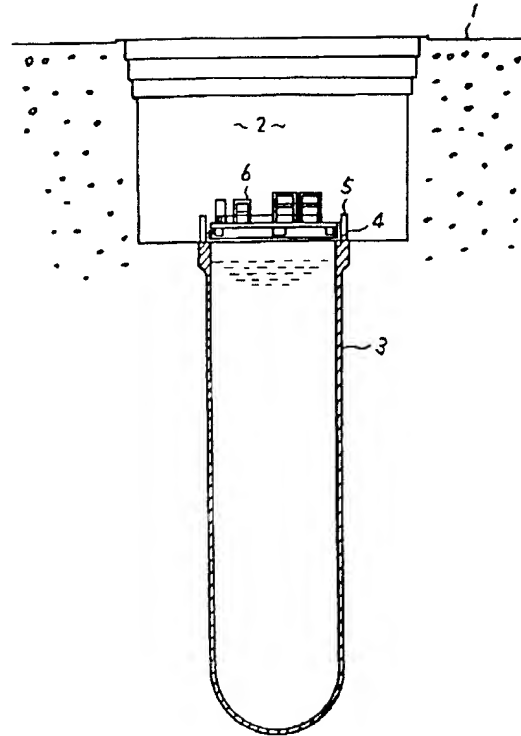
【図8】



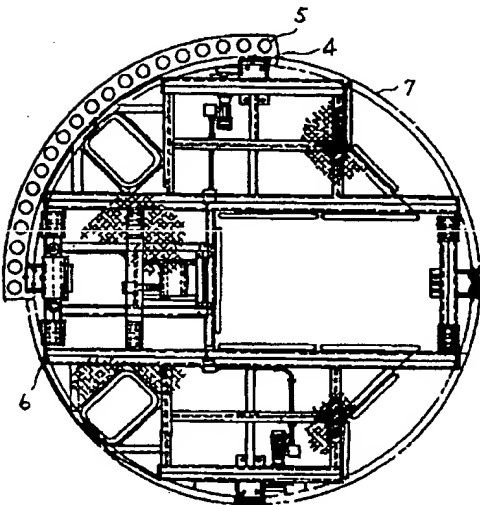
【図5】



【図6】



【図7】



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CLAIMS

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[Claim(s)]

[Claim 1] the reactor formed in the upper part of a reactor pressure vessel -- a well -- an internal reactor -- a well -- the aforementioned reactor which runs this circular rail [ which was installed free / attachment and detachment / on the level difference section for covering installation ], and circular rail top -- the reactor service platform characterized by providing a rotation stand with a diameter smaller than the bore of a well

[Claim 2] The aforementioned rotation stand is a reactor service platform according to claim 1 characterized by having prepared the bench which has opening for work and forming the loop wheel machine it runs through an up stand in the upper part of this bench.

[Claim 3] The aforementioned rotation stand is a reactor service platform according to claim 1 characterized by forming the driving gear which circles with a motor.

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[Translation done.]

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the reactor service platform for doing the work ranging from the operation rating floor to the whole region in a reactor in a boiling water reactor (it being called Following BWR.).

[0002]

[Description of the Prior Art] Generally, the work in a furnace in BWR can be divided roughly into routine works planned for every periodic check, such as fuel exchange and fuel movement, and the work of the work in a furnace etc. routine outside. Routine work and work routine outside are explained using drawing 5 or drawing 8.

[0003] Routine work is carried out by the fuel handling machine 31 which generally runs the rail top currently installed in the operation rating floor 1, and enforces receipts and payments of fuel to the fuel storage rack 33 in the fuel storage pool 32.

[0004] work routine outside -- a reactor -- the water in a well 2 is drained and it carries out from the service platform 6 installed in the RPV flange face 4 of the upper part of a reactor pressure vessel (it is called Following RPV.) 3 This service platform 6 circles in the circular rail 7 top beforehand installed in the RPV flange face 4. And it circles in the inside of the inside space formed by the RPV stud bolt 5 set up on the RPV flange face 4. the work from this service platform 6 -- a reactor -- possibility that an operator is contaminated according to the radiation from the pars basilaris ossis occipitalis and reactor pressure vessel 3 of a well 2 was large

[0005] On the other hand, the work of the work in a furnace etc. routine outside may be done from on the fuel handling machine 31 on the viewpoint of radiation exposure reduction to the operation rating floor 1. In this case, there was demerit in which the work in a furnace and work of fuel movement in the fuel pool 32 installed in the operation rating floor 1 etc. could not carry out simultaneously.

[0006]

[Problem(s) to be Solved by the Invention] the radioactive substance which adhered to the fuel front face during fuel replacement work when work routine outside was done from on the service platform 6 -- a fall-off reactor -- it accumulates at the pars basilaris ossis occipitalis of a well 1, and becomes high dosage and a high pollution zone, and an operator's amount of contamination increases For this reason, on the radiation control, whole surface mask work was needed and the technical problem that working efficiency fell occurred.

[0007] On the other hand, when work routine outside was done from on a fuel handling machine 31, the technical problem that work in the fuel storage pools 32, such as fuel inspection, and reconstruction construction in a furnace could not be carried out in parallel occurred. Moreover, there was also a difficulty that a dryer, separator check, etc. which are not illustrated in the device storage pool 34 installed in the operation rating floor 1 could not be carried out in parallel.

[0008] what was made in consideration of the point of the above [ this invention ] -- it is -- the reactor from a viewpoint of contamination reduction -- it is in the state which carried out the water flare into the well 2, and aims at offering the reactor service platform which makes it possible to carry out in parallel to other work on the operation rating floor 1 moreover

[0009]

[Means for Solving the Problem] the reactor formed in the upper part of a reactor pressure vessel in this invention in order to attain the above-mentioned purpose -- a well -- an internal reactor -- a well -- the aforementioned reactor which runs this circular rail [ which was installed free / attachment and detachment / on the level difference section for covering installation ], and circular rail top -- the reactor service platform characterized by to provide a rotation stand with a diameter smaller than the bore of a well is offered

[0010]

[Function] thus, the thing to constitute -- a reactor service platform -- a reactor -- a well -- it can run the circular rail top installed on the internal level difference section for reactor covering installation for this reason, the reactor at which a worker is equivalent to the height of a RPV flange face -- a well -- without it gets down to a pars basilaris ossis occipitalis -- moreover -- a reactor -- it becomes possible to enforce routine works, such as fuel move work, in parallel to the work of the work in a furnace etc. routine outside to the middle height of a well, where a water flare is carried out Contamination reduction of an operator and the period of a periodic check can be shortened through such work.

[0011]

[Example] With reference to drawing 1 or drawing 4, one example of this invention is explained below. drawing 1 -- setting

-- the reactor service platform 10 -- a reactor -- this circular rail [ which was laid on level difference section 2a for reactor covering installation in a well 2 ] 11, and circular rail 11 top It consists of rotation stands 12 which circle 360 degrees or more. This rotation stand 12 circles with a driving gear 14. A driving gear 14 consists of motor and reducer 14a and wheel 14b interlocked with this. The work floor 15 is installed in the central pars basilaris ossis occipitalis of the rotation stand 12. The up stand 13 is installed by the work floor 15. A monorail 16 is attached in the upper part of the up stand 13, and the hoist 17 which attached electric-winch 17a and air-hose reel 17b is attached there at it.

[0012] In drawing 2 , the rectangular opening 18 is formed in the center section of the work floor 15 of the reactor service platform 10. The balustrade 19 for fall prevention of an operator is set up by the periphery side of opening 18, and pillar 13a of the up stand 13 is further set up by the outside.

[0013] In drawing 3 , it is attached in the driving gear 14 of the reactor service platform 10 free [ the rotation of the auxiliary ring 20 other than wheel 14b ]. Guide plate 11a of the circular rail 11 is contacted, it rotates, and this auxiliary ring 20 is used as an object for position gap prevention of the reactor service platform 10. Guide plate 11a is attached so that it may circle, while the configuration of the circular rail 11 contacts the auxiliary ring 20. in order that [ moreover, ] a worker may go up and down from the operation rating floor 1 to the work floor 15 -- a reactor -- inside the stairway 21 and the reactor service platform 10, the ladder 22 is attached at the inside upper part of a well 2

[0014] Next, an operation of this example which consists of such composition is explained. first -- the circular rail 11 -- a reactor -- it lays on level difference section 2a for reactor covering installation in a well 2 The rotation stand 12 is carried on this installed circular rail 11. Service tools (not shown) various [ in a reactor ] are attached at the nose of cam of a wire rope of the hoist 17 installed in the monorail 16 in the upper part of the up stand 13, and it hangs and takes down to it from the opening 18 of the work floor 15. The wire rope of the hoist 17 which operates the control panel which the rotation stand 12 does not illustrate, and was revolved, and was attached in the monorail 16 is moved to the upper and lower sides and right and left, and the rotation stand 12 is positioned. By such operating instruction, the position of a hoist 17 can be doubled to every position in RPV3. next, it is shown in drawing 4 -- as -- a reactor -- work can be enforced by state 2b which carried out the water flare by Mr. Takashi Nakama in a well 2 Moreover, the height of the rotation stand 12 of the reactor service platform 10 is made lower than handrail 1a set up by the operation rating floor 1. For this reason, the fuel handling machine 31 which runs the operation rating floor 1 top can run ranging over this handrail 1a and the rotation stand 12. Thus, work of the work in a furnace from the reactor service platform 10 etc. routine outside and routine works, such as fuel movement by the fuel handling machine 31, can be carried out in parallel. the work from this fuel handling machine 31 -- a reactor -- receipts and payments of the fuel to the fuel rack 33 installed in the fuel storage pool 32 prepared in the side of a well 2 and the work in the device storage pool 34 can be illustrated

[0015] installing the pool gate 36 in the pool gate 35 and the device storage pool 34 to the fuel storage pool 32 furthermore -- a reactor -- a water flare can be carried out to middle height 2b of a well 2

[0016] thus -- according to this example -- a reactor -- where a water flare is carried out to a well 2, since the work of the work in a furnace in a reactor etc. routine outside can be done from on the reactor service platform 10, the work by contamination reduction of a worker and protector wear on a radiation control is improved, and improvement in working efficiency can be aimed at moreover, the reactor service platform 10 -- a reactor -- by installing free [ rotation ] in a well 2, it becomes possible to do the routine work from a fuel handling machine 31, and the work from the reactor service platform 10 routine outside in parallel, and large shortening of constant \*\*\*\*\* is attained

[0017]

[Effect of the Invention] according to the reactor service platform according to this invention as explained above -- a reactor -- since work becomes possible where a water flare is carried out to a well, and the work from a fuel handling machine can moreover be enforced in parallel, contamination reduction of an operator, improvement in working capacity, and also large shortening of constant \*\*\*\*\* can be aimed at

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**TECHNICAL FIELD**

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[Industrial Application] this invention relates to the reactor service platform for doing the work ranging from the operation rating floor to the whole region in a reactor in a boiling water reactor (it being called Following BWR.).

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PRIOR ART

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[Description of the Prior Art] Generally, the work in a furnace in BWR can be divided roughly into routine works planned for every periodic check, such as fuel exchange and fuel movement, and the work of the work in a furnace etc. routine outside. Routine work and work routine outside are explained using drawing 5 or drawing 8.

[0003] Routine work is carried out by the fuel handling machine 31 which generally runs the rail top currently installed in the operation rating floor 1, and enforces receipts and payments of fuel to the fuel storage rack 33 in the fuel storage pool 32.

[0004] work routine outside -- a reactor -- the water in a well 2 is drained and it carries out from the service platform 6 installed in the RPV flange face 4 of the upper part of a reactor pressure vessel (it is called Following RPV.) 3 This service platform 6 circles in the circular rail 7 top beforehand installed in the RPV flange face 4. And it circles in the inside of the inside space formed by the RPV stud bolt 5 set up on the RPV flange face 4. the work from this service platform 6 -- a reactor -- possibility that an operator is contaminated according to the radiation from the pars basilaris ossis occipitalis and reactor pressure vessel 3 of a well 2 was large

[0005] On the other hand, the work of the work in a furnace etc. routine outside may be done from on the fuel handling machine 31 on the viewpoint of radiation exposure reduction to the operation rating floor 1. In this case, there was demerit in which the work in a furnace and work of fuel movement in the fuel pool 32 installed in the operation rating floor 1 etc. could not carry out simultaneously.

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EFFECT OF THE INVENTION

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[Effect of the Invention] according to the reactor service platform according to this invention as explained above -- a reactor -- since work becomes possible where a water flare is carried out to a well, and the work from a fuel handling machine can moreover be enforced in parallel, contamination reduction of an operator, improvement in working capacity, and also large shortening of constant \*\*\*\*\* can be aimed at

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] the radioactive substance which adhered to the fuel front face during fuel replacement work when work routine outside was done from on the service platform 6 -- a fall-off reactor -- it accumulates at the bottom of a well 1, and becomes high dosage and a high pollution zone, and an operator's amount of contamination increases For this reason, on the radiation control, whole surface mask work was needed and the technical problem that working efficiency fell occurred.

[0007] On the other hand, when work routine outside was done from on a fuel handling machine 31, the technical problem that work in the fuel storage pools 32, such as fuel inspection, and reconstruction construction in a furnace could not be carried out in parallel occurred. Moreover, there was also a difficulty that a dryer, separator check, etc. which are not illustrated in the device storage pool 34 installed in the operation rating floor 1 could not be carried out in parallel.

[0008] what was made in consideration of the point of the above [ this invention ] -- it is -- the reactor from a viewpoint of contamination reduction -- it is in the state which carried out the water flare into the well 2, and aims at offering the reactor service platform which makes it possible to carry out in parallel to other work on the operation rating floor 1 moreover

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**MEANS**

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[Means for Solving the Problem] the reactor formed in the upper part of a reactor pressure vessel in this invention in order to attain the above-mentioned purpose -- a well -- an internal reactor -- a well -- the aforementioned reactor which runs this circular rail [ which was installed free / attachment and detachment / on the level difference section for covering installation ], and circular rail top -- the reactor service platform characterized by to provide a rotation stand with a diameter smaller than the bore of a well is offered

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OPERATION

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[Function] thus, the thing to constitute -- a reactor service platform -- a reactor -- a well -- it can run the circular rail top installed on the internal level difference section for reactor covering installation for this reason, the reactor at which a worker is equivalent to the height of a RPV flange face -- a well -- without it gets down to a bottom -- moreover -- a reactor -- it becomes possible to enforce routine works, such as fuel move work, in parallel to the work of the work in a furnace etc. routine outside to the middle height of a well, where a water flare is carried out Contamination reduction of an operator and the period of a periodic check can be shortened through such work.

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**EXAMPLE**

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The bird's-eye view showing the reactor service platform which is one example of this invention.

[Drawing 2] The plan of the reactor service platform shown by drawing 1 .

[Drawing 3] The side elevation of the reactor service platform shown by drawing 1 .

[Drawing 4] Outline drawing of longitudinal section of the nuclear-reactor-building upper part which laid the reactor service platform shown by drawing 1 .

[Drawing 5] Outline drawing of longitudinal section of the nuclear-reactor-building upper part which laid the conventional service platform.

[Drawing 6] the reactor in which the conventional service platform was installed -- outline drawing of longitudinal section of a well

[Drawing 7] The plan showing the conventional service platform.

[Drawing 8] The side elevation showing the conventional service platform.

[Description of Notations]

2 -- reactors -- a well and a 2a-- reactor -- a well -- the level difference section for covering installation, and 3 -- a reactor pressure vessel, 10 -- reactor service platform, a 11 -- circular rail, and 12 -- a rotation stand, a 13 -- up stand, 14 -- driving gear, and 14a-- a motor and a reducer, 17 -- hoist (loop wheel machine), and opening for 18 -- work

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[Translation done.]

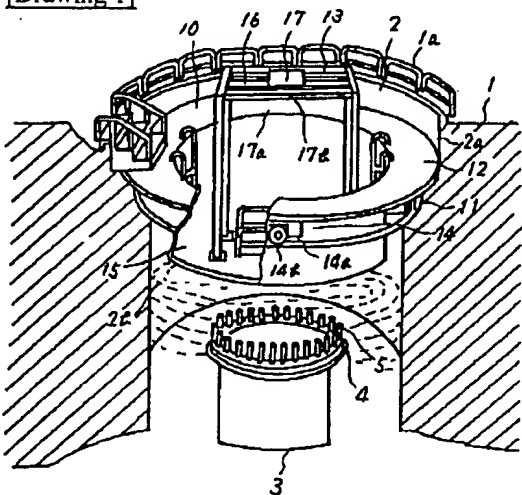
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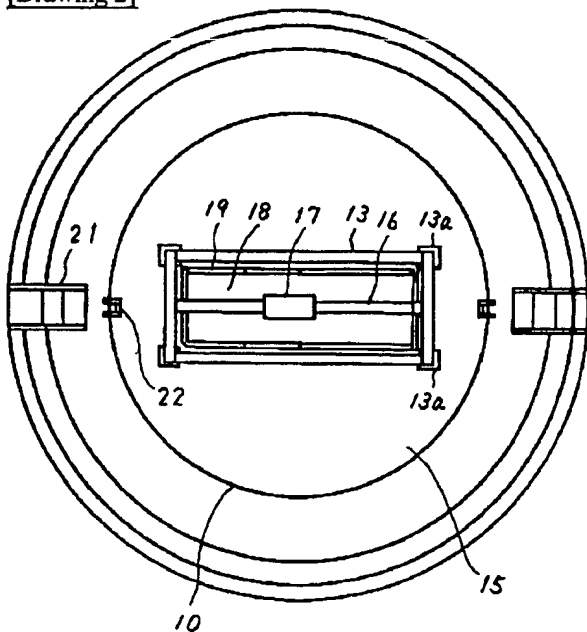
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**DRAWINGS**

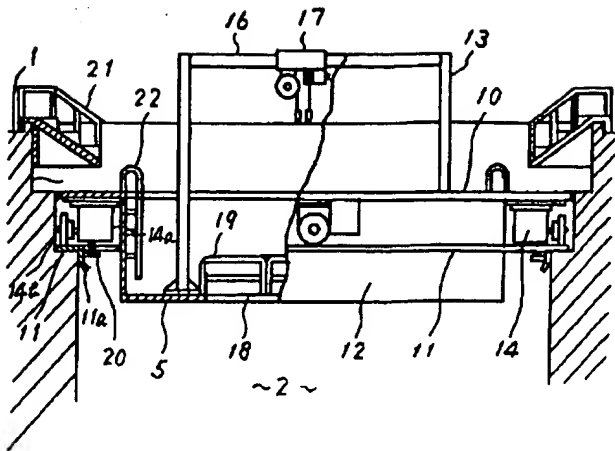
[Drawing 1]



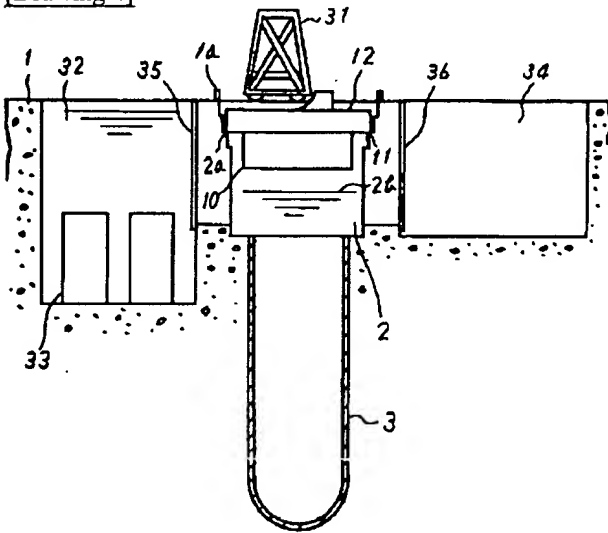
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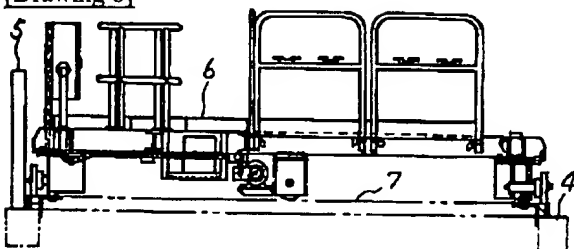
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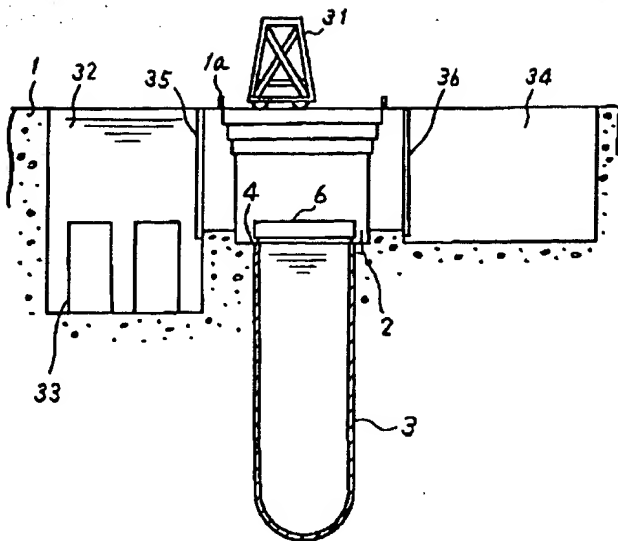
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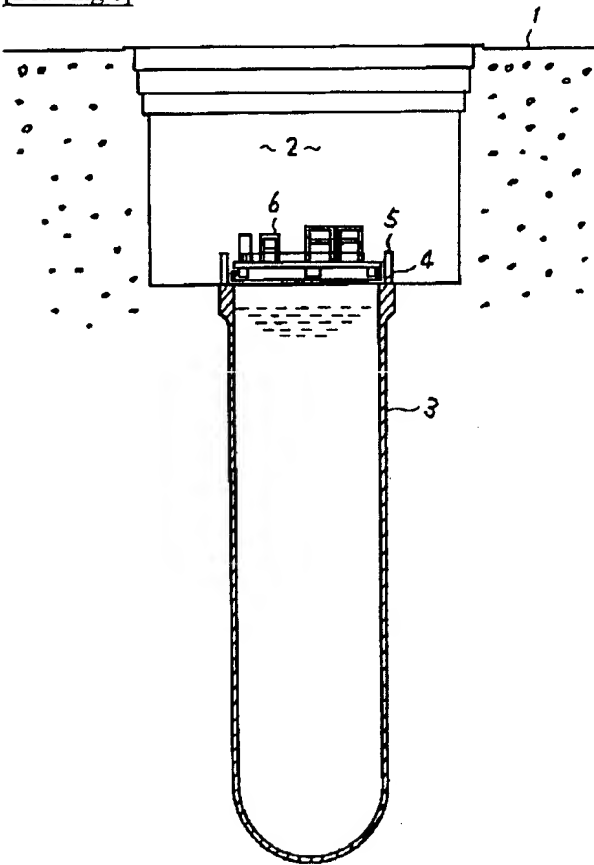
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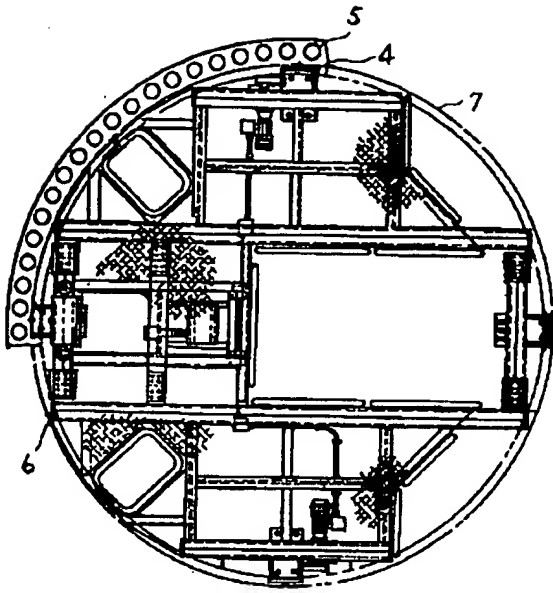
[Drawing 5]



[Drawing 6]



[Drawing 7]



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